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United States
Department of
Agriculture

Forest
Service

Fire and
Aviation
Management

COURSE TO THE FUTURE:

Positioning Fire and Aviation Management

DEDICATION

We dedicate this report to the people who lost their lives while striving to protect our country's natural resources during the 1994 fire season.

It is our sincere hope that through efforts such as "Course to the Future: Positioning Fire and Aviation Management," we may never again experience such tragedy.

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COURSE TO THE FUTURE:

Positioning Fire and Aviation Management

A comprehensive strategy aimed at improving Forest Service firefighter safety and increasing the agency's fire cost efficiencies. The enclosed findings and recommendations target a new direction designed to lead Forest Service fire management into the 21st Century.

May 1995

"Uncontrollable wildfire should be seen as a failure of land management and public policy, not as an unpredictable act of nature. The size, intensity, destructiveness and cost of the wildfires of the 1980s and 1990s is no accident. It is an outcome of our attitudes and priorities.

The fire situation will become worse rather than better unless there are changes in land management priority at all levels."

1994 National Commission on Wildfire Disasters

The Chief of the U.S. Forest Service commissioned this report to assess a changed physical, social, economic, and organizational reality. Thus, this report makes recommendations to better position Forest Service fire management for a future that -- by all indications -- appears much different than the past.

The report specifically focuses on: **Factors that influence firefighter safety and factors that contribute to large fire costs.** Furthermore, the report supports ecosystem protection and ecosystem restoration goals described in the Chief's Course to the Future (October 1994).

Report Directed By:

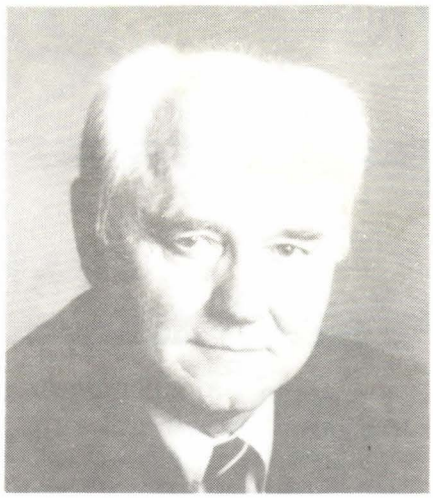
Mary Jo Lavin — 3 May 95
Mary Jo Lavin — Date
National Director, Fire and Aviation Management

Report Recommended By:

Joan M Comanor — 3 May 1995
Joan M.Comanor — Date
Deputy Chief, State and Private Forestry

Approved:

Jack Ward Thomas — 3 May 1995
Jack Ward Thomas — Date
Chief



LETTER FROM THE CHIEF

It is time to re-focus our future in fire -- and, yes, to make a course correction. This is a vital, necessary step we must all make together. Now. "Course to the Future: Positioning Fire and Aviation Management" -- the report you now hold in your hands -- points the way toward the 21st century.

I am counting on an across-the-board commitment from all of you in the Forest Service family.

For the most part, the revelations in this report reflect the serious concerns that surfaced in our agency's Region-by-Region 1994 fire season reviews. As you read through the enclosed findings and recommendations, you will see that many relate directly to the safety of our employees.

Safety is both a personal and a Forest Service responsibility. I am therefore demanding your personal involvement and commitment in leading our workforce to re-establish the highest regard to our safety program.

This report also addresses the significant cost of fire suppression activities. We must dispel the myth that emergency fire costs are "free." This is completely unacceptable attitude -- especially in terms of its tremendous impacts on taxpayers and to other Forest Service programs.

I applaud all of you for your ongoing hard work and efforts in our fire management program. We now need a continued commitment from each and every one of you. We must all be held accountable to see that each and every one of these recommendations is given serious and reasoned consideration.

I commend this report's recommendations to your thoughtful consideration. And I expect nothing less than your full participation as we position ourselves for the future.

Jack Ward Thomas

JACK WARD THOMAS

Chief

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EXECUTIVE SUMMARY

Undoubtedly, the 1994 fire season challenged many of our perceptions about the potential for fire severity. To be sure, 1994 made us question our basic beliefs about our organization's ability to deal with serious fire situations.

This report draws on a wide group of recently completed Forest Service reviews, summaries, and assessments (Figure 1). Its findings also reflect a gamut of issues and concerns that have appeared repeatedly since 1985. The historical trend data, along with program results, indicate a serious need to change or adjust Forest Service program emphasis. The enclosed recommendations, therefore, target a new direction and strategy in fire management.

KEY RECOMMENDATIONS TO IMPROVE FIREFIGHTER SAFETY AND REDUCE LARGE FIRE COSTS

The following summarizes the five key recommendations set forth in this report. Several other related findings and recommendations are further discussed in subsequent chapters:

Ecological Processes

Recommendation: Increase mechanical and prescribed fire treatments to 3,000,000 acres per year in fire-dependent ecosystems by the year 2005. Emphasize appropriate ecological recovery efforts on recently burned wildfires.

Sustaining Fire-Dependent Ecosystems

Recommendation: By the year 2005, establish a multi-funded, interdisciplinary account for restoration and maintenance of fire-dependent ecosystems.

Recommendation: Develop a workforce capable of achieving, restoring, and protecting these ecosystems at this scale.

Forest Land Management Planning

Recommendation: Establish prescribed fire objectives and assess fire consequences into the land management planning process. Address the ecological basis for fire across the landscape. Fully display the long-term consequences anticipated as a result of both fire inclusion and fire exclusion in plan direction.

Wildland/Urban Interface

Recommendation: Renegotiate state and local cooperative fire agreements with partners at the wildland/urban interface to clarify protection responsibilities. Phase out as primary protection agency in urbanized and developing rural areas.

Reorienting the Workforce; Accountability of Line Officers

Recommendation: Move toward preparing 75 percent of the total workforce to be trained, qualified, and available to support fire emergencies by the year 2000.

Recommendation: Intensify training of line officers to better redeem fire management responsibilities.

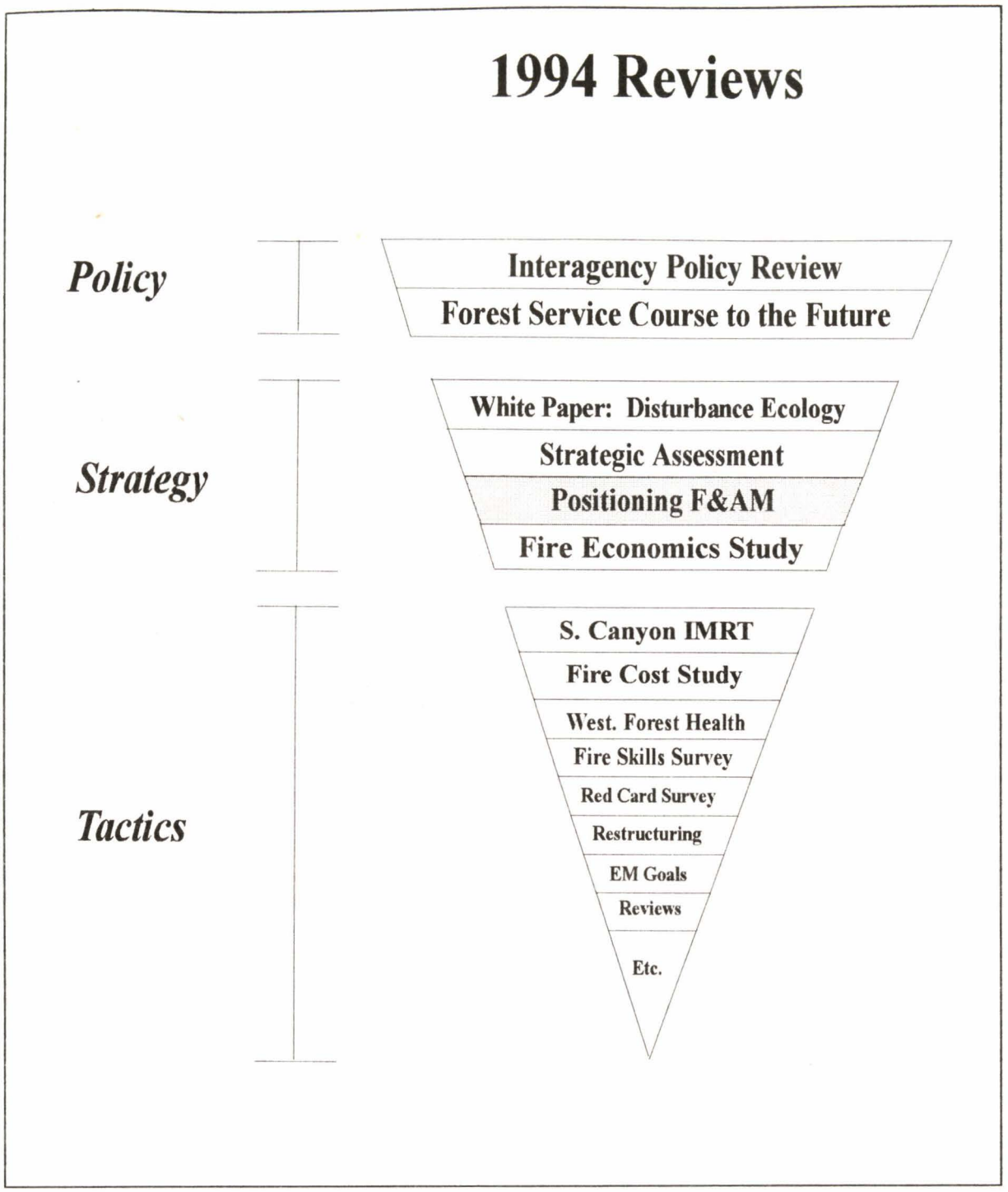

Figure 1. Hierarchy and relationships of related documents.

COURSE TO THE FUTURE: Positioning Fire and Aviation Management

"The 1994 wildfires confronted us with a forest health problem that had its beginnings more than 100 years ago. And most certainly, the same problems will be with us next summer and each summer thereafter until we recognize that some actions are necessary to return fire to the environment -- to improve forest health and reduce the risk that fire will damage site productivity or destroy human life and property."

Forest Service Chief Jack Ward Thomas before the Agriculture Research, Conservation and Forestry Senate Subcommittee, August 1994.

INTRODUCTION

- **Despite having widely known safe-practice procedures, access to an advanced fire behavior prediction system, required personal protective equipment, and an established firefighter safety training program -- 34 people lost their lives across interagency jurisdictions in 1994...**
- **On National Forest System lands, more than $750 million was spent for emergency wildfire suppression in 1994...**

There's no question that we're succeeding with remarkable initial and extended attack success. In fact, fewer than 2 percent of 1994's 70,000 wildfires across all jurisdictions required large-scale interagency mobilization efforts.

But, while we're doing a good job -- we need to make a course correction. For considering the combination of firefighter fatalities, suppression costs, and resource damage, 1994's fire season was one of the most devastating we've ever experienced.

Conventional wisdom for fires that have escaped initial attack suggests that increases in expenditures tied to massive mobilizations lead to increases in suppression effectiveness. We suspect this is not true. The cost of suppressing these large fires is increasing, yet we do not see a corresponding decrease in acres burned. We are becoming more aware, especially in fire-adapted ecosystems, that we are operating past the point of diminishing returns during large fire suppression activities.

Paradoxically, if we remain on a course of fire exclusion -- it will directly conflict with our ecosystem goals.

"All of our successes have been setting us up for our worst defeats. We're encountering fuels and fire behavior that I've never seen in my career. And I'm 53."

Gerald Adams, Fire Marshal
North Lake Tahoe Fire Protection District

This report addresses concerns and recommends solutions to solve these urgent dilemmas that will continue to grow in severity and confront us -- unless we correct our course now. A comprehensive strategy that aims to improve our firefighter safety and simultaneously increase our cost efficiencies is called for. It is the theme and purpose -- the mandate of this report.

The Forest Service's fire and aviation management program has reached an important juncture. The physical, social, economic, and organizational environment that influences the agency's ability to sustain a safe, cost-effective program has changed. This report's recommendations, findings, and desired future outcomes chart a viable course into the future that successfully targets how to overcome obstacles resulting from many of these changes:

- Agency priorities, organization restructuring, and a changing workforce culture are all resulting in declining employee support during fire emergencies.
- The potential for large, catastrophic wildfires continues to increase. Changes in species composition and stand structure -- compounded by drought and declining forest health -- have predisposed large, contiguous areas to severe stand-replacement fires.
- The public's expectation for wildfire protection is growing. Development at the wildland/urban interface, coupled with a demand for forest resources continues to escalate. Remarkably, this escalation is occurring with little public understanding -- or tolerance -- for the ecological processes necessary for the health and sustainability of forests over the long term.
- Shrinking federal budgets are intensifying the need to make smart investments over the long term.

BACKGROUND

This report's findings are derived from a general summary of long-term data trends, Regional reviews of the 1994 fire season, and issues and concerns that have appeared repeatedly in Forest Service documents beginning with the 1985 fire season review. The team reviewed many documents (listed in Figure 1), analyzed data related to fire occurrence and Forest Service personnel, and carefully considered and anticipated potential future scenarios before reaching the conclusions presented in the report. These general findings include:

- **From 1970-1994, Forest Service fire management remained highly effective on most initial attack efforts (Figures 2, 3, 4, 5).**
- **Only 2 percent of all 1994 fires required large-scale suppression efforts (Figure 6).**
- **In 1994, the majority of burned acres resulted from very few fires. In fact, 94 percent of the total burned acres resulted from 2 percent of the total fires (Figure 7).**
- **Similarly, the majority of fire-related suppression expenses derive from a very small number of fires. For example, those fires which cost more than $1 million to suppress (1 percent of our total fires) accounted for 62 percent of total emergency suppression funds.**
- **Fire and Aviation Management appropriated and emergency fire suppression expenditures for fiscal year 1994 accounted for 33 percent of the Forest Service's total budget.**
- **The greatest cost and highest impact-consequence wildfire suppression decisions are generally accompanied by the least analysis.**
- **Wildfire resource losses rarely fall within projected limits as described in Forest Plans.**
- **A relatively small percentage of the Forest Service's total workforce engages in emergency firefighting. In 1994, only one-half of the total Forest Service workforce was red carded. Of this red-carded group, only 25 percent performed 75 percent of the total fire assignments.**

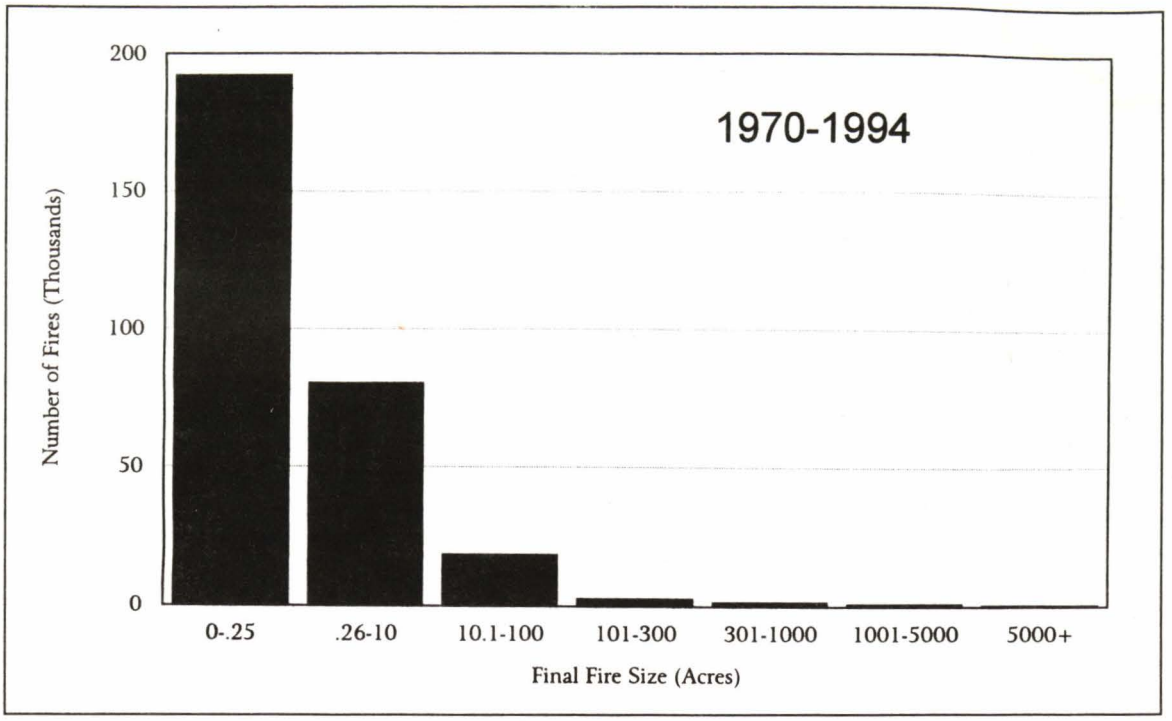

Figure 2. Number of fires on NFS lands, 1970-1994, by size class.

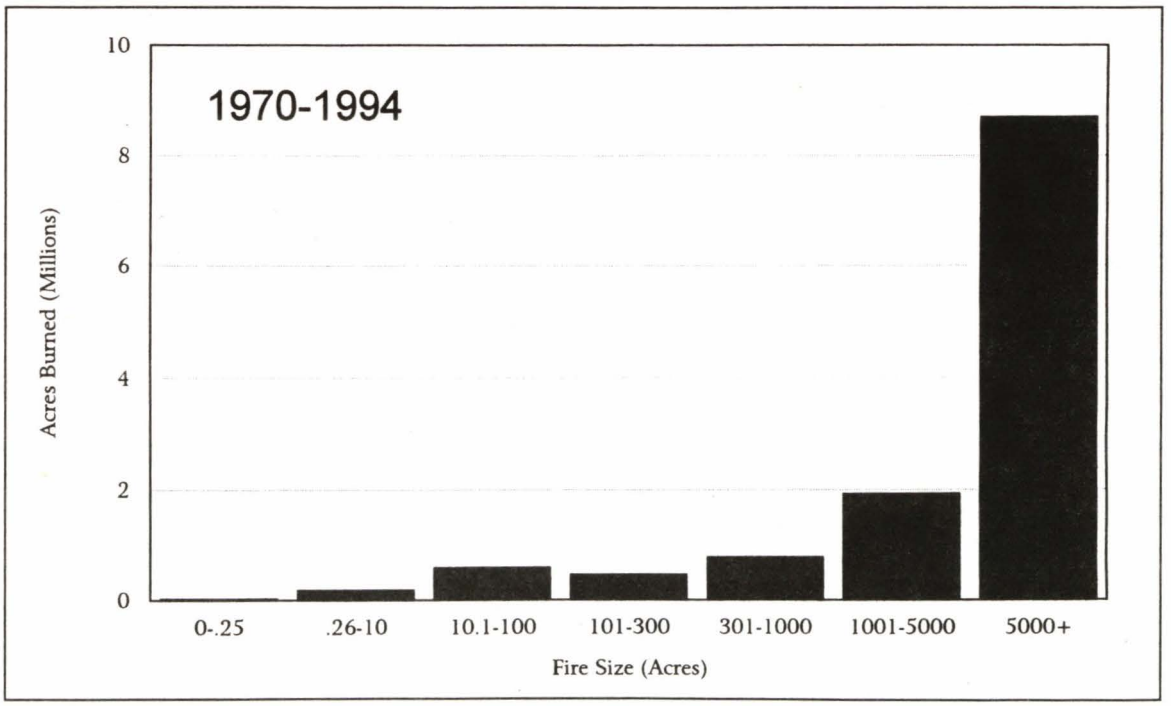

Figure 3. Acres burned on NFS lands, 1970-1994, by size class.

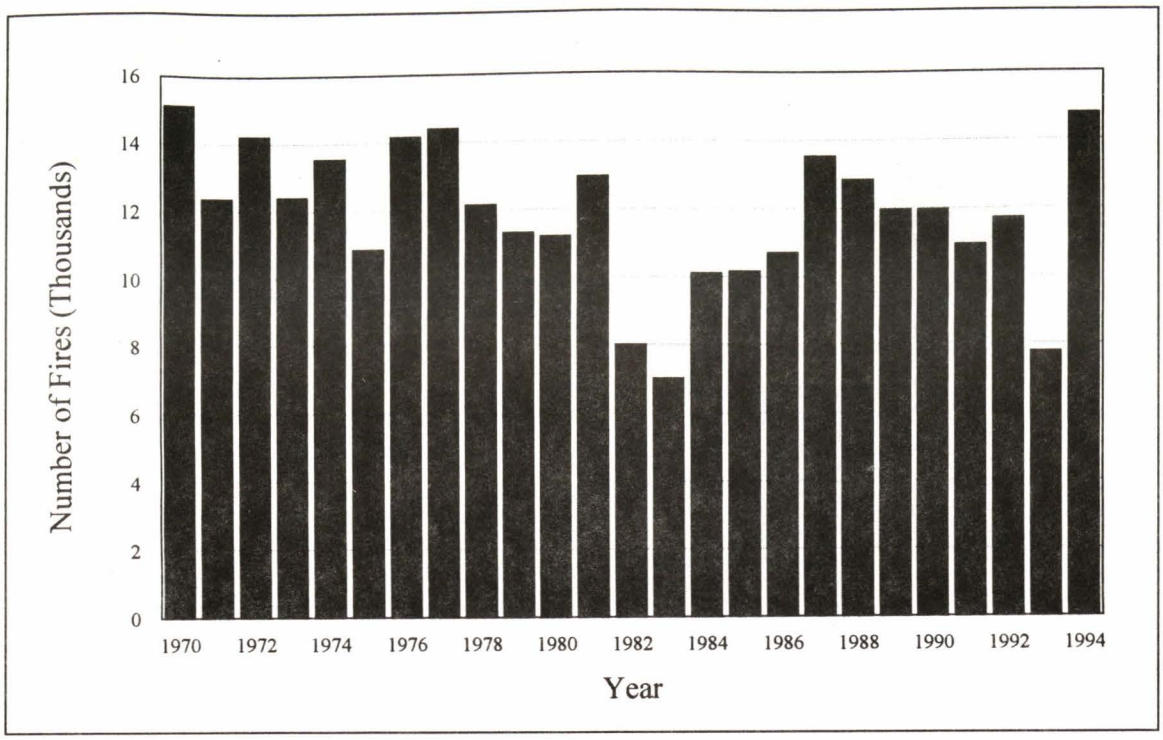

Figure 4. Number of fires on NFS lands, 1970-1994.

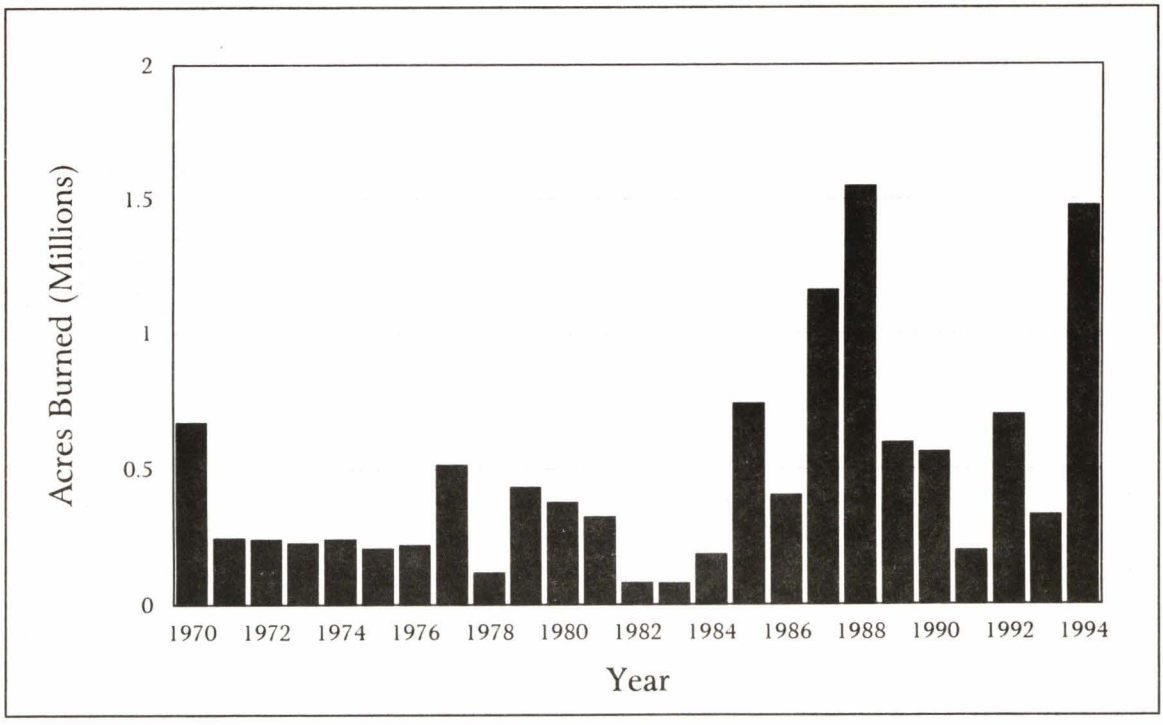

Figure 5. Acres burned on NFS lands, 1970-1994.

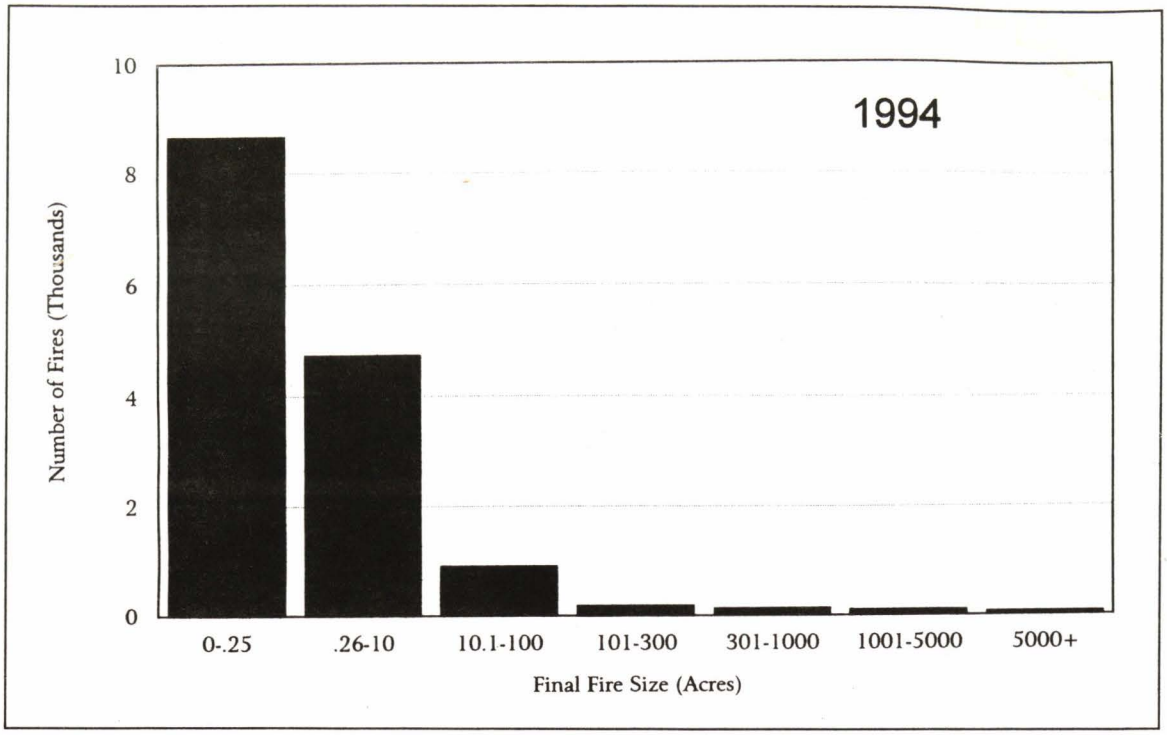

Figure 6. Number of fires on NFS lands, 1994, by size class.

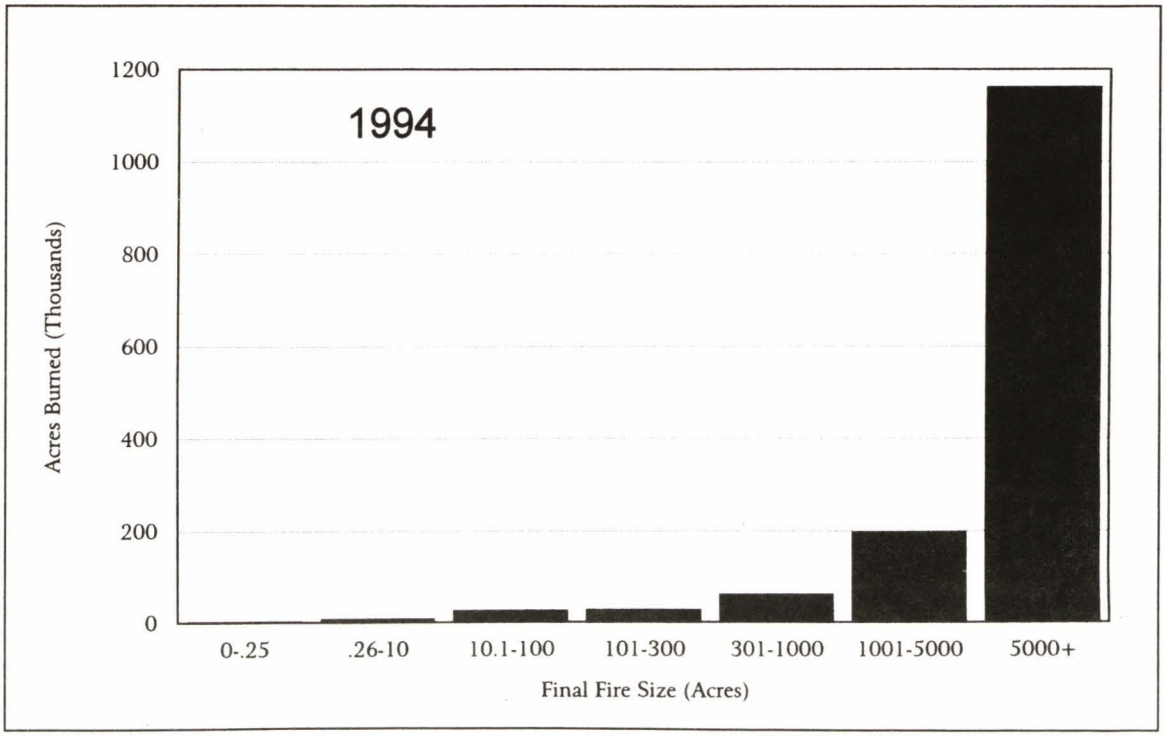

Figure 7. Acres burned on NFS lands, 1994, by size class.

I. PHYSICAL ENVIRONMENT

"Earth does have a fire problem, but it is one of maldistribution -- there is too much of the wrong kind of fire in the wrong places at the wrong times, and not enough of the right kind of fire at the right places at the right times."

Stephen Pyne, Author
"World Fire: The Culture of Fire on Earth"

FINDINGS:

■ Short-interval fire-adapted forests occupy approximately one-third of all National Forest System lands.

■ Due to a prolonged absence of periodic low-intensity burning, changes in species composition and stand structure have predisposed these forests to extensive insect and disease attack -- as well as to severe stand replacement wildfires. In these fire-adapted forests the late seral stages are most at risk.

■ Many long-interval fire-adapted forests last burned at the turn of the century. In the absence of mosaic patterned burning, many of these forests have developed extensive high-risk fire behavior characteristics.

■ Drought-induced stresses on vegetation coupled with the drying of dead fuels has occurred during the last decade throughout the West.

■ Ecological processes -- or their absence -- have a profound influence on our ability to manage (protect and sustain) forests. Even so, we seldom plan or operate with these ecological processes in mind.

"The firefighter is not the culprit. The culprit is the fact we have not balanced a good suppression program with a large-scale prescribed fire program and timber harvest practices that reduce the flammability of these forests."

Robert Mutch, Fire Scientist
Intermountain Fire Sciences Laboratory

DESIRED FUTURE OUTCOME:

■ In those ecosystems where low-intensity fires have been reintroduced, wildfires are safer and less costly to suppress. This results because the ecosystems in which they occur have been maintained with periodic treatments, and therefore exhibit less severe fire behavior.

■ Fire management policies and practices are tailored to the ecosystem being managed. Specific fire treatment objectives are set in Forest Plans.

■ Short-interval fire-adapted ecosystems include periodic, low-intensity fire.

■ Fire-adapted ecosystems with long-fire return intervals display vegetative mosaics consistent with their fire regime.

PHYSICAL ENVIRONMENT RECOMMENDATIONS:

A. Prioritize funding for prescribed fire treatments to:

1. Maintain the successful programs that currently produce ecological benefits at a larger scale in high-risk areas.

2. Capitalize on wildfire events by recovering large, recently burned areas (estimate 500,000 acres per year) using ecologically appropriate strategies tailored to the fire regime under consideration.

B. Establish a landscape-scale ecosystem restoration program that uses a combined mix of mechanical understory treatments and prescribed burning on 3,000,000 acres per year by the year 2005.

1. Direct treatments toward fire-adapted ecosystems.

2. Maintain ecologically appropriate fire intensities and burn intervals through objectives and levels of treatment established in Forest Plans.

3. By the year 2005, establish a multi-funded interdisciplinary account for restoration and maintenance of short-interval fire-adapted ecosystems.

C. Display economic tradeoffs of long-term fire suppression in Forest Plans.

D. Develop a workforce capable of achieving, restoring, and protecting these ecosystems at this scale.

E. When conducting Escaped Fire Situation Analyses, recognize and evaluate the long-term effects of fire and alternative suppression strategies on the ecosystem in which fire occurs.

II. SOCIAL/POLITICAL

"The issue of fire protection in the interface is one of the greatest concerns we have as wildland fire protection agencies. The Forest Service sees it as one of the issues that we must move on, quickly and decisively."

James R. Lyons
Under Secretary, Natural Resources and Environment, USDA
1995 National Wildland Fire Conference, Phoenix, Arizona, February 1995

FINDINGS:

■ Our internal and external publics better understand fire as an ecological process.

■ Increasing public use and interest in public lands creates greater demands and conflicts.

■ Internal and external awareness concerning fire's role in the ecosystem is limited.

■ Strong coordination with states, local government, and other agencies is essential for effective fire and ecosystem management.

■ Federal, state and local laws and regulations often do not support fire's role in ecosystem management.

■ Forest Plans do not provide managers, cooperators and the public with clear fire management direction within an ecosystem context.

■ Public concern and expectations are not aligned with the Forest Service mission and capabilities.

■ Partnerships in fire management activities with adjacent landowners are generally limited to federal and state agencies.

■ Population in the wildland/urban interface is increasing rapidly and expects and uses a significant amount of wildland fire protection resources.

■ Wildland/urban realities, fire safe design, and fuels management practices are not well understood or accepted by the public.

"All of us are frustrated. We know the answers to the problems. Somehow we need to convince the public, and particularly the homeowners, that they have a responsibility for their own safety and the survival of their homes. Somehow we need to get their attention."

Bill Baden, Senior Fire Services Specialist
National Fire Protection Association

■ The wildland/urban interface contains hazards that wildland firefighters are ill-equipped and ill-prepared to confront.

■ Due to the increased population and private development within the interface, public concern and expectations influence decisions and the commitment of federal resources.

■ Forest Service Manual direction for planning wildfire suppression strategies prioritizes the protection of life and private property above protecting natural resources. Suppression forces therefore protect urban values at the expense and detriment of forest ecosystem values. The result is even greater acreages of burned wildlands.

■ Particulate emission regulations are under review and may be tightened, significantly affecting prescribed burning.

DESIRED FUTURE OUTCOME:

■ A better understanding -- internally and externally -- of fire as an ecological process. Public and cooperators recognize that fire can benefit the maintenance and sustainability of ecosystems necessary for multiple use.

■ Our cooperators and publics understand and support the planning and implementation of increased use of prescribed fire in ecosystem management.

■ Environmental laws and regulations enable the use of prescribed fire for restoration and protection of fire-adapted ecosystems. Interagency strategies protect air quality by trading increased prescribed burning for uncontrolled wildfire emissions.

■ The public, adjacent landowners and cooperators are actively involved in defining alternatives and management practices for prescribed fire and wildfire suppression.

■ Forest Plans fully incorporate fire management in an ecosystem context.

■ The Forest Service no longer assumes primary protection responsibility in urbanized and developing rural areas.

■ Using existing and proposed federal grant programs (such as Rural Community Fire Protection and Rural Fire Prevention Control), the Forest Service directs funding to support state and local fire agencies to assume fire protection responsibilities.

■ State and local governments, homeowners, landowners, and the Forest Service unite to promote fire-safe communities in the wildland/urban interface.

■ The Forest Service demonstrates leadership in fire safe building practices and maintenance by example with its own facilities.

■ Forest Service firefighters, managers, and line officers are fully committed to following the Safe Practices Code for suppression of wildland fires to ensure the safety of all firefighters. This commitment to safety is also ensured for all personnel involved in prescribed fire programs.

"It is expected that even with a three to four fold increase in prescribed burning, these measures will result in a net improvement in air quality in northeast Oregon."

Brian Finneran
Oregon Department of Environmental Quality
Commenting on his state's Prevention of Significant Deterioration strategy

SOCIAL/POLITICAL RECOMMENDATIONS:

A. Incorporate fire management into public education efforts for ecosystem management. Program should address the various roles of fire in shaping ecosystems, as well as fire's influence on land management and wildland/urban interface areas.

B. Involve cooperators and public opinion leaders in developing Forest Plan revisions to help define the role of fire in forest ecosystems and effects on adjacent lands.

C. Incorporate fire consequences into the land management planning process. Address the ecological basis for fire across the landscape. Fully display the long-term consequences anticipated as a result of both fire inclusion and fire exclusion in plan direction.

D. Forest Plan revisions ensure that desired future conditions define appropriate fire regimes and fire prescriptions. Forest Plans should describe desired conditions by defining desired frequency, intensity, and magnitude of disturbance.

E. Work closely with federal and state agencies and other cooperators to manage fire under ecosystem objectives.

F. Cooperate with states and Environmental Protection Agency (EPA) in developing comprehensive strategies to avoid violation of Prevention of Significant Deterioration (PSD) and other Clean Air Act provisions. These strategies may include increased prescribed burning, emission limits, smoke management, air quality monitoring, mechanical treatment and fire suppression.

G. Manage the wildland/urban interface to reduce hazards and improve the ability to control fire. Priority should focus on assisting landowners to develop fire-safe communities. Forest Service needs to lead by example on all Forest Service facilities located in the wildlands.

H. Place highest priority on opportunities for land ownership adjustments to improve the ability to manage fire in wildland/urban interface areas.

I. Reaffirm Forest Service policy that our legislative mandate, budgeting process, and capabilities do not provide for us assuming the primary role of fire protection in wildland/urban interface.

J. Redefine roles and responsibilities to eliminate the Forest Service as the primary protection agency in urbanized and developing rural areas.

K. Expand cooperative fire protection programs to help facilitate states' efforts to assume primary protection responsibility for urbanized wildlands.

L. Ensure all employees know and understand: the Safe Practices Code (Chief's letter on Restructuring and Firefighter Safety, February 7, 1995, 1200/5100/5700); the 10 Standard Orders and 18 Situations That Shout Watch Out; and LCES (Lookouts, Communication, Escape Routes, and Safety Zones). Ensure all employees take a personal interest in the safety of themselves, all other employees, the public and our cooperators.

M. Ensure effective safety communication by encouraging all levels of fire suppression personnel to raise safety concerns.

III. ECONOMICS

"Using fire is cheaper than fighting it. Last year, a 60-acre wildfire in El Dorado County California cost $110,000 to suppress. A nearby 55-acre prescribed burn cost only $1,000."

Jim Smith, California Department of Forestry and Fire Protection
Sacramento Bee Newspaper
November 27, 1994

FINDINGS:

■ Future funding scenarios for most government programs -- at all levels -- indicate little or no growth. At the same time, costs of fighting wildfire steadily increase. Successful competition for a shrinking funding base will therefore depend on sound analysis and demonstrated economic benefits.

. . . 94 PERCENT OF THE TOTAL BURNED ACRES RESULTED FROM 2 PERCENT OF THE TOTAL FIRES.

■ During the past 25 years, initial attack * effectiveness has been maximized. An average of 98 percent of wildfires are controlled during initial attack or short-duration extended attack*. The remaining 2 percent -- wildfires requiring large mobilizations -- account for 94 percent of burned acres and 60 percent of our yearly wildfire expenditures.

■ The largest expenditure decisions (escaped fire mobilization) are made with the least amount of analysis (Escaped Fire Situation Analysis -- EFSA). Large fire decisions are often made by people who are the least prepared to do so.

■ Direct costs of our operations do not align with our planned cost. This is manifested in the wildland/urban interface.

■ Internal barriers make the transfer and use of funds for multi-financed and multi-benefitting projects difficult.

■ The relationship between Forest Plan goals, fire management implementation plans, and effects following fires often bear little resemblance to one another.

■ Alternative suppression strategies (confine, contain, control) are poorly understood and rarely implemented with expected results.

■ Decisions on moving from extended initial attack to large fire mobilizations are made with inadequate consideration of economic impacts.

■ In many instances the first suppression strategy decision is most important but if poorly made sets the stage for extraordinary costs.

■ Siege-like fires occur at very high cost and their suppression is rarely successful until the onset of season-ending weather. Changes in the magnitude and complexity of more recent fires require a change in how we fight them.

■ The greatest expenditure large-fire decisions are usually driven by non-economic factors -- such as political and social pressure. Yet, the value or costs derived from these pressures are not adequately reflected in our current analysis tools. Until these costs are considered, our analysis tools will be unable to accurately guide large-fire management decisions.

*For the purpose of this document, we defined initial attack as fires less than 10 acres and extended attack as fires less than 100 acres.

DESIRED FUTURE OUTCOME:

■ Fire-adapted ecosystems are restored and maintained -- thereby reducing suppression cost and resource loss.

■ Effective expenditures within fire management are based on long-term investment strategies in addition to initial attack.

■ Cost outlays in which effectiveness and efficiencies can be increased are identified.

■ A comprehensive and integrated analysis is adopted that shows program balances necessary to achieve the greatest marginal return on dollars invested.

■ Large-fire economic analysis tools reflect the value of all factors that influence large-fire decisions. These tools are readily available and sufficently accurate to aid these decisions on an immediate-need basis, under field conditions.

ECONOMICS RECOMMENDATIONS:

A. Strengthen and improve the standards and requirements for EFSA. Expand the current pilot project to revise the EFSA to ensure it becomes a more viable and effective management tool.

B. Establish delegation of authority for EFSA signature based on fire complexity and fire cost projections.

C. Develop planning techniques and operational procedures that rely on fewer but more effective resources on large fire-suppression efforts occurring beyond the point of diminishing returns.

D. Maintain a high priority for completing large-fire cost studies.

E. Conduct an initial assessment of outyear ecosystem restoration and maintenance needs by fire regime.

F. Conduct an outyear assessment for determining fire suppression costs plus resource loss in the absence of restoration and maintenance treatment by fire regime.

G. Support tax and insurance incentives for fire-safe communities in the wildland interface.

H. Reexamine risk assessment in Forest Service Manual 1410 to provide program management oversight in fire.

IV. ORGANIZATIONAL ENVIRONMENT

"Every Forest Service employee has a responsibility to support and participate in wildfire suppression activities as the situation demands."

Forest Service Manual
5130.3 - Policy

FINDINGS:

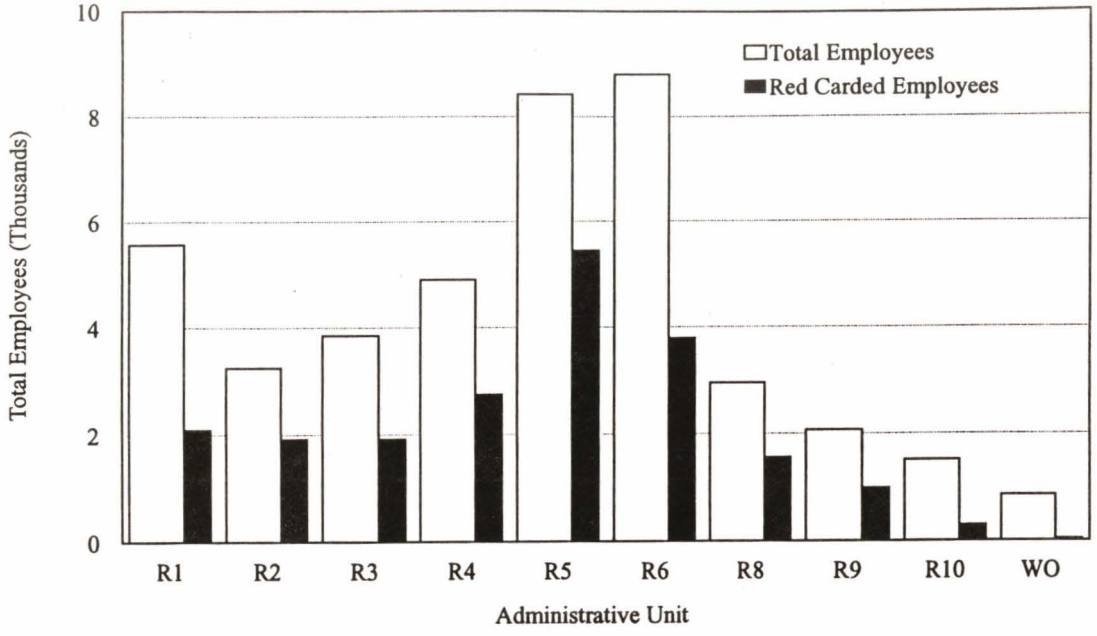

Figure 8. Comparison of red-carded employees with total workforce by administrative unit.

■ A shrinking workforce may be impeding fire management's capabilities in attaining ecosystem management goals. The result: loss of positions that provide the essential oversight for a safe and effective fire management organization. To date -- with the exception of work force numbers and grade level -- no agency-wide organizational priorities have been defined.

■ In some cases, changes in the workforce have diminished our capability to effectively and safely conduct fire management activities. Without a fundamental change in direction, this dilemma will continue as fire management's role increases in direct response to ecosystem management needs.

■ A large part of the agency's fire suppression and application experience is concentrated in a small number of people, resulting in less fire management capability throughout the organization.

■ In general, employees are less interested in participating in fire management activities. This is a departure from the past when fire was recognized as everyone's job. Different cultural and professional orientations result in different values concerning fire management. Many employees don't recognize the role of fire in restoring and maintaining ecosystems.

■ Because fewer people participate in fire management activities, it is especially difficult to fill overhead positions in support of large-fire incidents.

■ Fifty-two percent of the permanent, full-time and temporary employees in the Forest Service have red cards (Figure 8).

DESIRED FUTURE OUTCOME:

■ Fire-adapted ecosystems are restored and maintained -- thereby reducing suppression cost and resource loss.

■ Effective expenditures within fire management are based on long-term investment strategies in addition to initial attack.

■ Cost outlays in which effectiveness and efficiencies can be increased are identified.

■ A comprehensive and integrated analysis is adopted that shows program balances necessary to achieve the greatest marginal return on dollars invested.

■ Large-fire economic analysis tools reflect the value of all factors that influence large-fire decisions. These tools are readily available and sufficently accurate to aid these decisions on an immediate-need basis, under field conditions.

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Forest Service Manual
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FINDINGS:

■ A shrinking workforce may be impeding fire management's capabilities in attaining ecosystem management goals. The result: loss of positions that provide the essential oversight for a safe and effective fire management organization. To date -- with the exception of work force numbers and grade level -- no agency-wide organizational priorities have been defined.

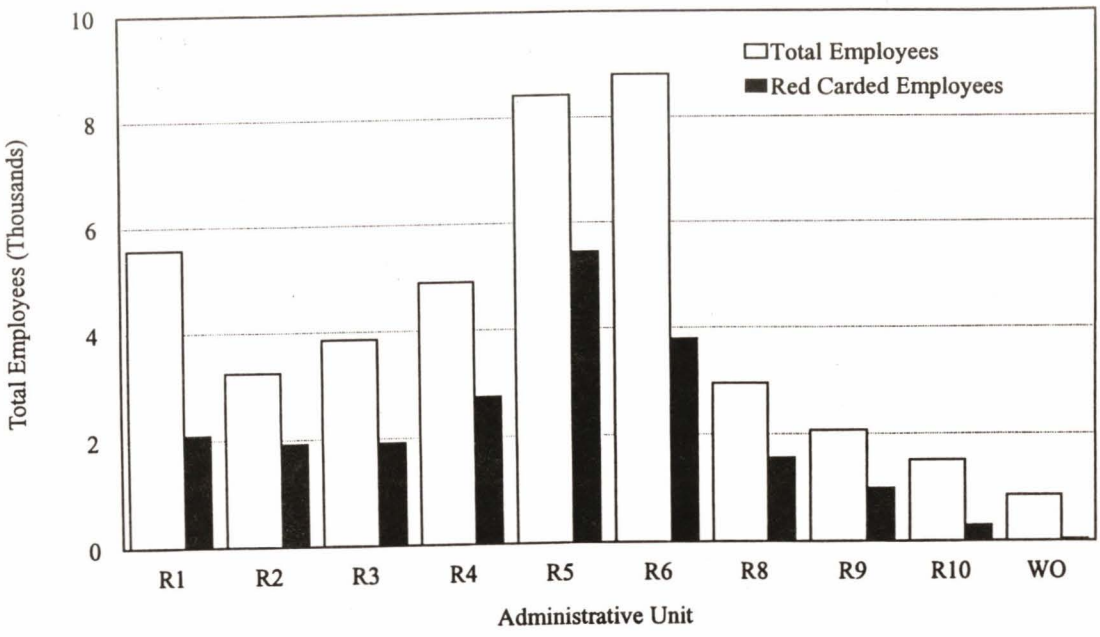

Figure 8. Comparison of red-carded employees with total workforce by administrative unit.

■ In some cases, changes in the workforce have diminished our capability to effectively and safely conduct fire management activities. Without a fundamental change in direction, this dilemma will continue as fire management's role increases in direct response to ecosystem management needs.

■ A large part of the agency's fire suppression and application experience is concentrated in a small number of people, resulting in less fire management capability throughout the organization.

■ In general, employees are less interested in participating in fire management activities. This is a departure from the past when fire was recognized as everyone's job. Different cultural and professional orientations result in different values concerning fire management. Many employees don't recognize the role of fire in restoring and maintaining ecosystems.

■ Because fewer people participate in fire management activities, it is especially difficult to fill overhead positions in support of large-fire incidents.

■ Fifty-two percent of the permanent, full-time and temporary employees in the Forest Service have red cards (Figure 8).

DESIRED FUTURE OUTCOME:

■ Fire-adapted ecosystems are restored and maintained -- thereby reducing suppression cost and resource loss.

■ Effective expenditures within fire management are based on long-term investment strategies in addition to initial attack.

■ Cost outlays in which effectiveness and efficiencies can be increased are identified.

■ A comprehensive and integrated analysis is adopted that shows program balances necessary to achieve the greatest marginal return on dollars invested.

■ Large-fire economic analysis tools reflect the value of all factors that influence large-fire decisions. These tools are readily available and sufficently accurate to aid these decisions on an immediate-need basis, under field conditions.

ECONOMICS RECOMMENDATIONS:

A. Strengthen and improve the standards and requirements for EFSA. Expand the current pilot project to revise the EFSA to ensure it becomes a more viable and effective management tool.

B. Establish delegation of authority for EFSA signature based on fire complexity and fire cost projections.

C. Develop planning techniques and operational procedures that rely on fewer but more effective resources on large fire-suppression efforts occurring beyond the point of diminishing returns.

D. Maintain a high priority for completing large-fire cost studies.

E. Conduct an initial assessment of outyear ecosystem restoration and maintenance needs by fire regime.

F. Conduct an outyear assessment for determining fire suppression costs plus resource loss in the absence of restoration and maintenance treatment by fire regime.

G. Support tax and insurance incentives for fire-safe communities in the wildland interface.

H. Reexamine risk assessment in Forest Service Manual 1410 to provide program management oversight in fire.

IV. ORGANIZATIONAL ENVIRONMENT

"Every Forest Service employee has a responsibility to support and participate in wildfire suppression activities as the situation demands."

Forest Service Manual
5130.3 - Policy

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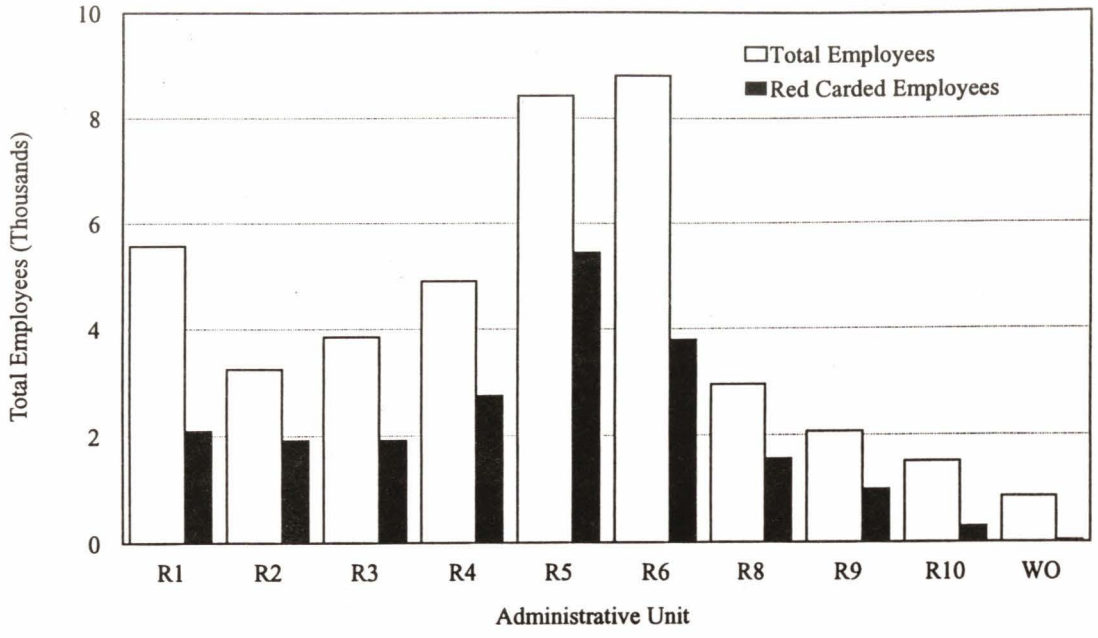

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■ Because fewer people participate in fire management activities, it is especially difficult to fill overhead positions in support of large-fire incidents.

■ Fifty-two percent of the permanent, full-time and temporary employees in the Forest Service have red cards (Figure 8).

■ Many of today's line officers have less experience and less interest in fire management, manifested by a lack of commitment to support safe and effective fire management programs. Strong competition and conflicts with other agency priorities exacerbate this problem.

"...I expect you to make sure that all qualified personnel, both suppression and support, contribute to the effort...Disruptions of other work is regrettable, but our highest need is to address safely and successfully our fire protection goals."

from a letter sent to all Regional Foresters
August 3, 1994, by Jack Ward Thomas, Chief

■ On extended initial attack and large fire incidents, many line officers are unprepared or inadequately trained to provide effective direction that reflects long-term ecosystem management goals. This is manifested by: longer duration incidents, larger burned acreage, significantly costlier incidents, and increased safety exposure and risks to incident personnel.

■ Firefighting resources are not being made readily available to support other unit, regional, or national incidents. Some unit managers still place other program priorities ahead of emergency response. This practice conflicts with the Chief's stated policy.

- ♦ Collateral duties have diminished fire management focus and precluded adequate oversight expected of key fire management positions.
- ♦ Project priorities elsewhere throughout the Forest Service have reduced the availability of fire skills outside of the fire organization.

■ Leadership is not providing strong enough direction or commitment to encourage the general workforce to become trained, qualified and available for support of fire emergencies. This leadership failure places an added burden and increased risk of injury onto those who do respond to fire support.

■ Many of our partners have expressed concern that they provide a high level of resources -- while our own employees stay home.

■ There are few adverse consequences when line officers and fire program managers fail to provide safe and effective fire suppression strategies and direction. The lack of adverse consequences results in many large fires where costs, incident duration and its associated long-term commitment of critical resources are ignored. This also has safety implications due to fatigue and long-term exposure -- with low probability of affecting final outcome of the incident.

- ♦ Fire-related skills and capabilities are not always commensurate with fire safety needs and requirements. There has been no attempt to develop a strategy to provide these skills over the long term.
- ♦ In some instances, placement of surplus employees from other disciplines has resulted in lower skilled, less experienced individuals assigned to fire management positions.

■ In 1994 many retirees and AD employees occupied positions where high-cost high-risk decisions were made with inadequate oversight.

■ Few rewards exist for line officers and fire program managers who do provide outstanding leadership for a safe and cost-effective fire management program.

■ Comprehensive national and Regional data that provides a clear picture of agency-wide firefighting readiness and capability is lacking. This is also true for the prescribed fire program. Both will become more critical as we integrate fire into ecosystem management.

- ♦ Anticipated workforce and budget reductions have required some units to defer filling some fire positions for extended periods of time, often through active fire seasons.
- ♦ Retirement incentives in addition to the normal rate of retirement attrition has drained highly skilled and experienced individuals from the fire organization.
- ♦ Anticipated retirements in the next 5 years could deplete the fire management workforce of experienced personnel (Figure 9).

■ Current pay regulations which tie premium pay and differentials to specific incident management positions result in: turned down assignments, less interest in overhead training paths, refusal to participate in suppression activities, and a continued decline in employee participation in the fire program.

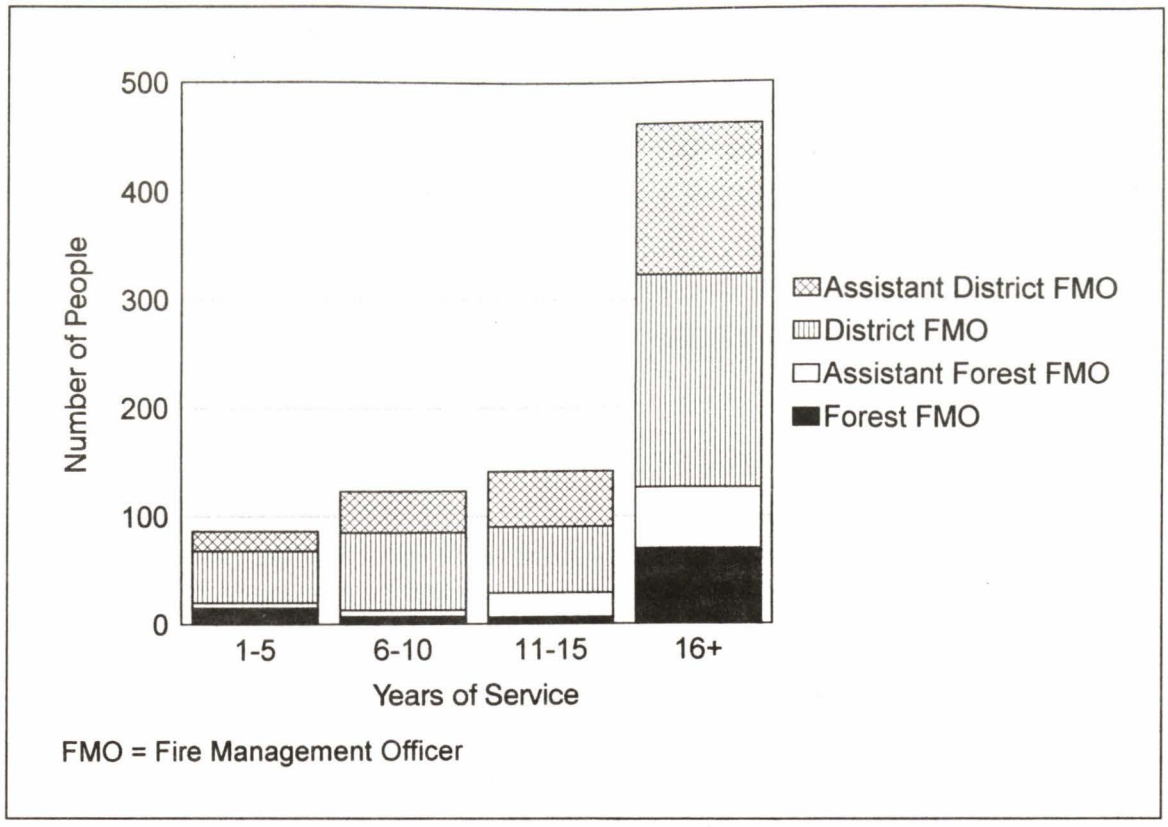

Figure 9. Number of people and years of fire service (data collected December 1994).

DESIRED FUTURE OUTCOME:

■ The Forest Service, as an organization, recommits to support and participate in wildfire suppression activities with safety as the overriding objective.

■ A workforce that understands the important link between fire management and ecosystem management.

■ Line officers understand and redeem their role and responsibility to provide a safe and cost effective fire management program.

■ A commitment from top management to hold line officers and program managers accountable for their actions and decisions.

- ♦ Recognition of unacceptable performance and outcomes, both in safety and cost containment.
- ♦ Management at all levels provides consistent relief from conflicting priorities when supporting fire emergency responses.

■ Clearly defined agency skills and experience expectations are required for all fire management positions.

■ Fire program managers possess the necessary skills, experience and qualifications commensurate to the positions they hold.

■ Organizational downsizing efforts reflect current funding and long-term direction and support to integrate fire considerations into ecosystem management.

■ A method to ascertain national fire readiness and availability of fire application skills is developed and maintained.

- ♦ Recognition for top performers, line officers and program managers.
- ♦ An oversight system to reinforce and support inexperienced line officers during large-fire incidents.

ORGANIZATIONAL ENVIRONMENT RECOMMENDATIONS:

A. Develop national policy for downsizing efforts that establish agency priorities and recognize the need to maintain certain critical program levels essential to achieve ecosystem management goals.

B. The Chief reinforces the concept that ALL Forest Service employees must be responsible to provide some level of support during fire emergencies.

C. Develop a long-term organization staffing plan to restore and sustain fire and aviation management skills for fire suppression and prescribed fire needs.

D. Increase the existing number of trained, qualified and available incident management resources to 75 percent of the total workforce by the year 2000.

E. Strengthen ability and skills of line officers through formal scheduled training, direct experience in the field, and oversight reinforcement for inexperienced line officers. Use award system to recognize those who consistently exceed established safe and cost-effective objectives.

F. Develop a process to collect information that clearly displays agency-wide readiness and capability for fire suppression and prescribed fire applications.

G. Conduct an assessment of future prescribed fire needs, as well as individual qualifications necessary to carry out the program.

H. Establish job performance requirements for fire program managers that clearly reflect the complexity and scope of the positions and assignment.

I. Promote efforts to revise pay regulations which discourage employees from serving in incident management positions for which they are most highly qualified.

CONCLUSION: Where We Go From Here?

"I commend this report's recommendations to your thoughtful considerations. And I expect nothing less than your full participation as we position outselves for the future."

Jack Ward Thomas, Chief

It's time to make a course correction.

As stressed by the Chief at the beginning of this report, these findings and recommendations are designed to to help our fire management program overcome the major obstacles--on a variety of fronts--that challenge us today.

These obstacles will not go away unless we--as individuals and as a unified agency --take the steps to confront and overcome them. To accomplish this, the desired future outcomes and recommendations set forth in this report now must be given serious considerations.

Fire and Aviation Management will develop an action plan to implement the recommendations contained in this report by July 1, 1995.

- **We will carry this report's themes and specific messages to all employees prior to July 1, 1995.**
- **We also will work with other agency administrators at the Federal, State, and local levels to seek cooperation with implementation of the appropriate recommendations.**

By considering the desired future outcomes and recommendations in this report, we will move the Forest Service's fire and aviation management program into the 21st Century.

Now, it's up to us--working together.

Mary Jo Lavin
National Director, Fire and Aviation Management

OTHER ACTIONS PLANNED FOR THE 1995 FIRE SEASON

1. The Director and Assistant Directors of Fire and Aviation Management will make safety and cost accountability presentations at the National Incident Commander's Workshop.

2. The Chief's letter explaining the Safe Practices Code will be emphasized at District family meetings prior to the 1995 fire season.

3. Four standing Area Command Teams have been formed to assist Regions experiencing heavy fire seasons with implementation of the Chief's Safe Practices Code and cost efficiency oversight.

4. Personnel from the Washington Office will carry out site visits to monitor the progress of the fire season.

5. Regional "hot line" reviews will be conducted periodically throughout the fire season by Washington Office personnel, local line officers and fire managers.

6. Each Region will form line officer support teams to coach less experienced local managers during times of critical fire suppression decision making.

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Deputy Fire Staff, Gifford Pinchot NF
Region 6

NOTES:

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Chief's Safe Practices Code

February 7, 1995

- Firefighter safety comes first on every fire, every time.
- The 10 Standard Firefighting Orders are firm...we don't break them; we don't bend them.
- Every firefighter has the right to know that his or her assignments are safe.
- Every fireline supervisor has the responsibility to confirm that safe practices are known and observed.

10 Standard Orders

Fight fire aggressively but provide for safety first.

Initiate all action based on current and expected fire behavior.

Recognize current weather conditions and obtain forecasts.

Ensure instructions are given and understood.

Obtain current information on fire status.

Remain in communication with crew members, your

18 Situations That Shout Watch Out

1. Fire not scouted and sized up.
2. In country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing fire behavior.
5. Uninformed on strategy, tactics and hazards.
6. Instructions and assignments not clear.
7. No communication link with crew members/ supervisors.
8. Constructing line without safe anchor point.
9. Building fireline downhill with fire below.

supervisor and adjoining forces.

Determine safety zones and escape routes.

Establish lookouts in potentially hazardous situations.

Retain control at all times.

Stay alert, keep calm, think clearly, act decisively.

10. Attempting frontal assault on fire.
11. Unburned fuel between you and the fire.
12. Cannot see main fire, not in contact with anyone who can.
13. On a hillside where rolling material can ignite fuel below.
14. Weather is getting hotter and drier.
15. Wind increases and/or changes direction.
16. Getting frequent spot fires across line.
17. Terrain and fuels make escape to safety zones difficult.
18. Taking a nap near the fireline.

LCES

Establish and identify the following at all times:

Lookouts
Communication
Escape Routes
Safety Zones

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It is time to re-focus our future in fire -- and, yes, to make a course correction. This is a vital, necessary step we all must take together. Now. "Course to the Future: Positioning Fire and Aviation Management" -- the report you now hold in your hands -- helps outline how I expect this agency to make this important and mandatory transition into the 21st Century.

Jack Ward Thomas, Chief

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